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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/805,323	03/22/2004	Masumitsu Iwata	03500.017969	9102

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FITZPATRICK CELLA HARPER & SCINTO
30 ROCKEFELLER PLAZA
NEW YORK, NY 10112

EXAMINER

LEADER, WILLIAM T

ART UNIT	PAPER NUMBER
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1742

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/19/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/805,323

Applicant(s)

IWATA ET AL.

Examiner

William T. Leader

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 January 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-7 is/are rejected.
- 7) ☐ Claim(s) 2 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 8/18/04; 9/30/04; 5/3/06.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

1. Applicant's election without traverse of Group I, claims 1-7 in the reply filed on January 8, 2007, is acknowledged.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

3. Claims 1 and 4 are rejected under 35 U.S.C. 102(b) as being anticipated by Japanese patent document 2001-152390.
4. The '390 document is directed to a method for forming zinc oxide by electrodeposition and drying the zinc oxide to adjust the water content. As indicated by the Derwent English language abstract, drying takes place at a high temperature in air. Air is a nitrogen atmosphere which contains oxygen as recites in instant claim 1. As shown in a machine translation of the Japanese document into English, paragraph [0143] discloses that the air used in the drying step may be 200°C or more. Paragraph [0139] indicates that the outlet temperature of the substrate was 350°C with 230°C when the speed of the substrate through the apparatus was 1000 mm/min. All limitations recited in instant claim 1 are met by the '390 document. Claim 4 is interpreted as reciting a Markush group which limits the scope of the inert gas recited in claim 1.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 3 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese patent document 2001-152390.

8. Claim 3 recites a range of pressure of 5 to 50 kPa under which the heat treatment is performed. As noted above, the heat treatment removes water from the coating. The pressure at which the heat treatment is performed is a result-effective variable. Reduced pressure, such as the range to 5 to 50 kPa, would have favored evaporation of water. Choice of a pressure less than atmospheric in the heat treatment of the '390 document would have been obvious because increased water removal from the coating would have been favored.

9. Claim 6 recites the rate at which temperature is raised. The '390 document discloses a range of transport speeds at which the substrate is conveyed through the drying section. As noted above, paragraph [0139] mentions 1000 mm/min; paragraph [0140] mentions 3000 mm/min. Each of the transport speeds would result in a different rate at which the temperature was raised. The rate at which the temperature is raised is a result-effective variable which determines, among other parameters, the duration of the drying treatment to obtain the desired water removal. Thus, choice of an appropriate rate would have been a matter of routine optimization.

10. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese patent document 2001-152390 in view of Ohmura et al (5,679,181).

11. Claim 5 recites that the substrate is in continuous form and is subjected to heat treatment while wound into a roll. The '390 document discloses the processing of a substrate in continuous form. See the figures. The Ohmura et al patent is directed to a process which includes coating and heating of a steel strip. The annealing heat treatment may be performed with the steel strip in the form of a coil which has the advantage of having small deviation in the diffusion layer of the coating owing to a uniformity of temperature distribution in the coil. See column 6, lines 21-29.

12. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese patent document 2001-152390 in view of Arao et al (5,804,466).

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13. Claim 7 recites a method of manufacturing a photovoltaic device. The '390 document discloses in paragraph [0002] that it is known to form a zinc oxide coating on a long substrate used to make a solar cell, i.e., a photovoltaic device. The Arao et al patent is directed to the electrochemical of zinc oxide for production of a photoelectric device. A device is shown in figure 3 and includes zinc oxide layer 302 and semiconductor layer 304 (column 6, lines 45-55). It would have been obvious to have formed the semiconductor layer at a temperature less than that at which the heat treatment of the zinc oxide layer was carried out to avoid removal of additional water which would form under the additional layers being formed

14. Claim 2 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The Kojima et al patent (6,806,505) is directed to the production of a light emitting device and discloses the heat treatment of zinc oxide in an atmosphere containing oxygen, such as an oxygen plasma (column 5, line 59 to column 6, line 16).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William T. Leader whose telephone number is 571-272-1245. The examiner can normally be reached on Mondays-Thursdays and alternate Fridays, 7:30-4:00.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King, can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

WL
William Leader
April 13, 2007

ROY KING
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700